

Strategies for food Enhancement (Part-I)

- Ever increasing population ^{necessity} → Enhancement of food production
- Biological principles ^{applies to} →

Animal husbandry

Plant breeding

 } have major role in ↑ efforts in food production
- Several new techniques →

Embryo transfer

Tissue culture

 } → pivotal role in enhancing food production

Animal Husbandry

- Agricultural practise of

breeding

raising

 } → Livestock.

○ Vital skill of farmer & as much as it is science as it is art

- Animal Husbandry ^{deals with}

care

breeding

 } of

livestocks

^{extended to include}

Fisheries

Farming

Poultry

Buffalo cows pigs horse cattle sheep camel goat

include

Rearing

Catching

Selling

fish molluscs Crustaceans
shell fish prawn crabs

Since time immemorial, animals like

bees silk worm prawns crabs fishes birds pigs cattle sheep camel

have been used by humans for products like

milk eggs meat wool silk honey

★ > 70% of livestock in India China ^{contribution to world farm} ≈ 25%

Newer technologies

Conventional practices of animal breeding & care

hence

productivity per unit is very low

both needed to → improve

quality

productivity

MANAGEMENT OF Farms & Farm Animals

★ A professional to

traditional practices

of farm management

 } gives much needed boost to food production.

DAIRY FARM MANAGEMENT

• ^{this we deal with} **Dairying** → management of animals for

milk

its products

 } for Human consumption.
→ processes

that

 → yield

improve quality of milk

Milk Yield → primarily dependant on → Quality of breeds in the farm

★ **Very important** selection of breeds good having

- High Yielding potential (under climatic cond. of area)
- Resistance to diseases

○ For yield potential to be realised cattle have to be

- ① housed well
- ② have adequate water
- ③ maintained disease free

○ Feeding of cattle → should be carried out in scientific manner

- with emphasis on
 - quality of fodder
 - quantity of fodder

★ **Stringent cleanliness & hygiene** → both of cattle & handlers → of paramount importance while

- milk & its products
- milking
- storage
- transport

○ Ensuring stringent cleanliness measures

- require: regular inspections
- with: proper record keeping
- helps in identifying & Rectifying problems as early possible

* Regular visits by veterinary doctor would be mandatory

POULTRY FARM MANAGEMENT

is a class of typically include → **domesticated fowls (birds)** used for their **Eggs**

- chicken
- ducks
- turkey
- geese

this word often used to refer to **Meat of only these birds** (but in more general sense may refer to meat of other birds too)

- Selection of → disease free & suitable breeds
- Proper safe → farm conditions
- Proper → feed & water
- Hygiene
- Health care

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NCERT THREAD NOTES

Bird flu virus → affects drastically → egg & chicken → consumption

ANIMAL BREEDING → important aspect of animal husbandry

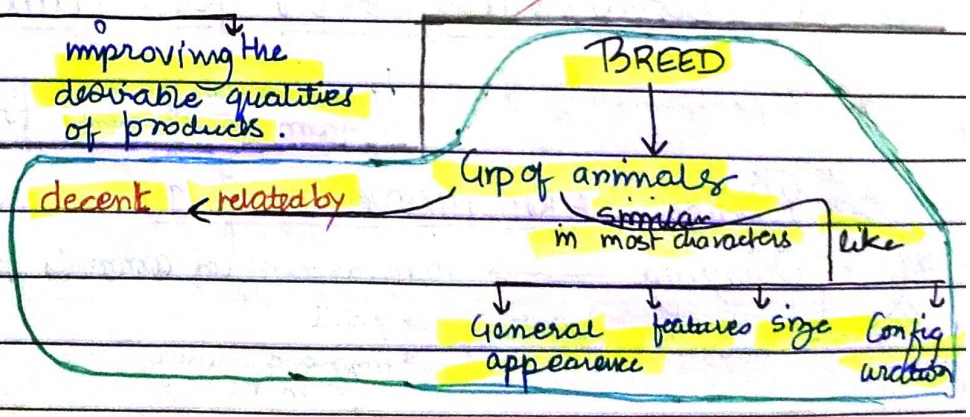
aims at

increasing yield of animals

improving the desirable qualities of products

In breeding
↓ b/w
animals of same breed

Out breeding
↓ b/w
different breeds



Improved breed of — cattle —> Jersey
 chickens —> Leghorn

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Inbreeding

Mating of

more closely related species within same breed for

4-6 generations

Breeding strategy

Superior male (of same breed) Superior female

mated

Progeny evaluated & then superior ♂ & ♀ identified for further mating

Superior ♀

Superior ♂

In case of cattle

Bull

↓ is Cow/buffalo
 ↓ that produces milk/lactation per

↓ which give rise to superior progeny than other males

* Inbreeding ↑ homozygosity
 increasing it
 → pure lines have to be evolved in any animals.

* Inbreeding → exposes the harmful recessive genes that are eliminated by selection

* Inbreeding helps in accumulation of superior genes & elimination of less desirable genes

Out-breeding

Breeding of

unrelated animals

which may be

Out Crossing

↓ b/w individuals of same breed but having no common ancestor for 4-6 generations

Offspring known as Out cross

* Best breeding method

↓ for animals that are below avg in productivity of milk product. Growth rate in beef cattle

* A single outcross helps to overcome inbreeding depression

Cross Breeding

↓ b/w different breeds
 Superior ♂ & ♀ of different breeds

mated ← are mated

allows

desirable qualities of 2 different breeds to combine

Progeny hybrids

themselves used for commercial production.

subjected to some form of

Inbreeding Selection

to develop the new stable breeds

superior to existing breeds

Eg. HISSARDALE

- new breed of sheep
- in Punjab developed.
- Crossing
 - Morino Rams
 - Bikaneri Ewes

Interspecific hybridisation

↓ b/w different species

2 animals of two different related species are mated

In some cases

Progeny combines desirable features of both parents.

↓ hence considered of economic value

Eg. MULE

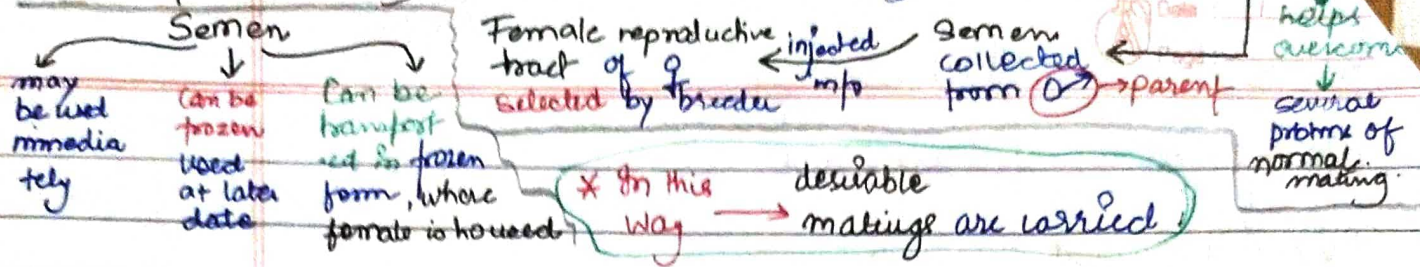
Selection at each step increases the productivity of inbred population

Continued inbreeding specially close inbreeding

inbreeding depression ← called } fertility ↓ productivity ↓ reduces

To restore fertility & yield → selected animal of breeding popula. should be mated with unrelated superior animals of same breed

Controlled breeding experiments are carried out using Artificial Insemination



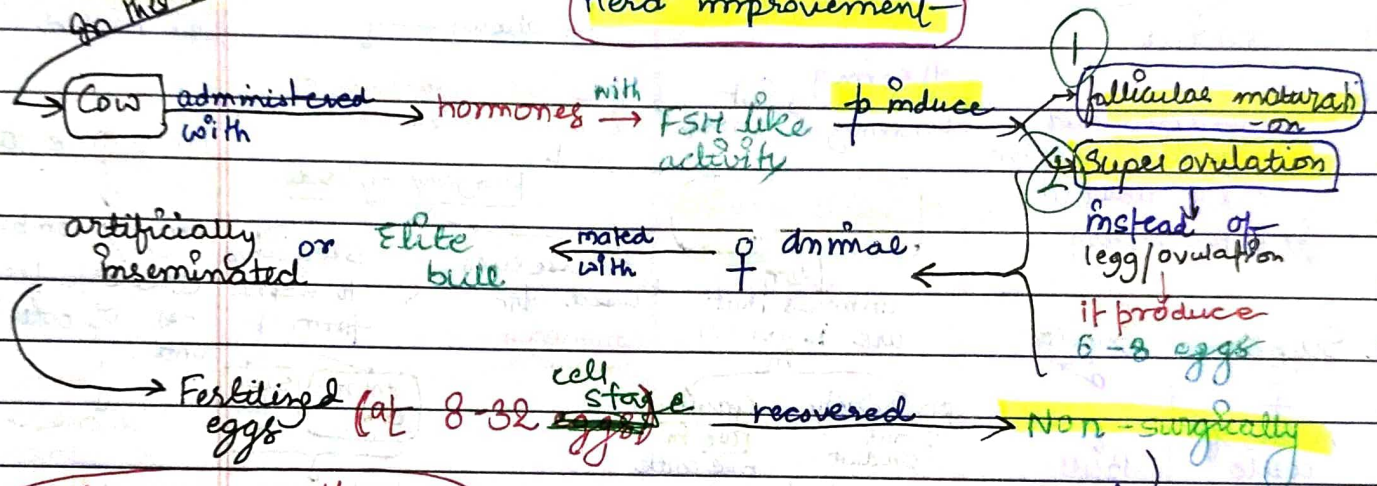
Success Rate of Crossing — mature ♀ animals } Is fairly low
mature ♂ animals

Artificial Insemination is carried out even though

To improve chances of successful prod. of hybrids. MOET ~ Multiple Ovulation Embryo Transfer

In this method,

programme for Herd improvement



* The genetic mother available for another round of ovulation.

Surrogate mother. than transferred to

MOET has been demonstrated in rabbit, cattle, sheep, buffalo, mares

High milk yielding ♀ breeds

High quality meat yielding ♂ breeds (butts)

Lean meat with less lipid

breed success fully to

↑ head size

↓ in less time

BEE KEEPING ⇒ APICULTURE

(Maintenance of hives of honeybee for prod. of honey) Old age cottage industry

Honey is food of High nutritive value
Indigenous system of medicine

honeybee produce → Bees wax → uses in industry → Cosmetics
 → Polishes of various kinds.

Increased demand of honey led to Large scale bee keeping practises
 it has become an established income generating industry
 (Large scale) ← what a practised in (Small scale)

★ Bee Keeping can be practised in Any area. where there are Sufficient bee pastures

★ Several species of honey bee can be reared
 most common be (Apis indica)
 Wild shrubs, Fruit orchards, Cultivated crops. of some
 Beehives can be kept in one's courtyard, verandah of house, even the roof

★ BEE KEEPING → Labour intensive
 → though easy but requires some specialised knowledge

There are several organisations teach bee keeping

Points to remember for successful bee keeping →

- (i) Selection of suitable location for beehives
- (ii) Knowledge of nature & habits of bees.

(iii) Catching & keeping of Swarms - Crops of bees.

(iv) Management of Beehives during different seasons

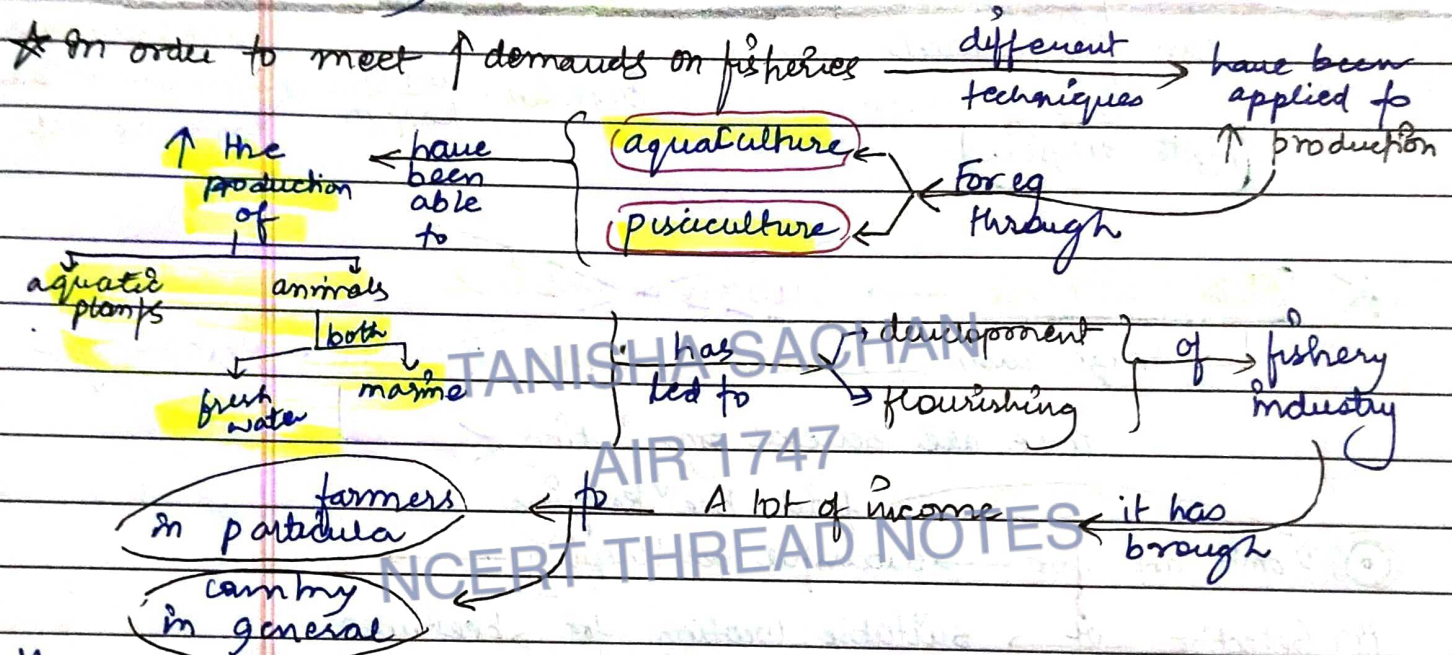
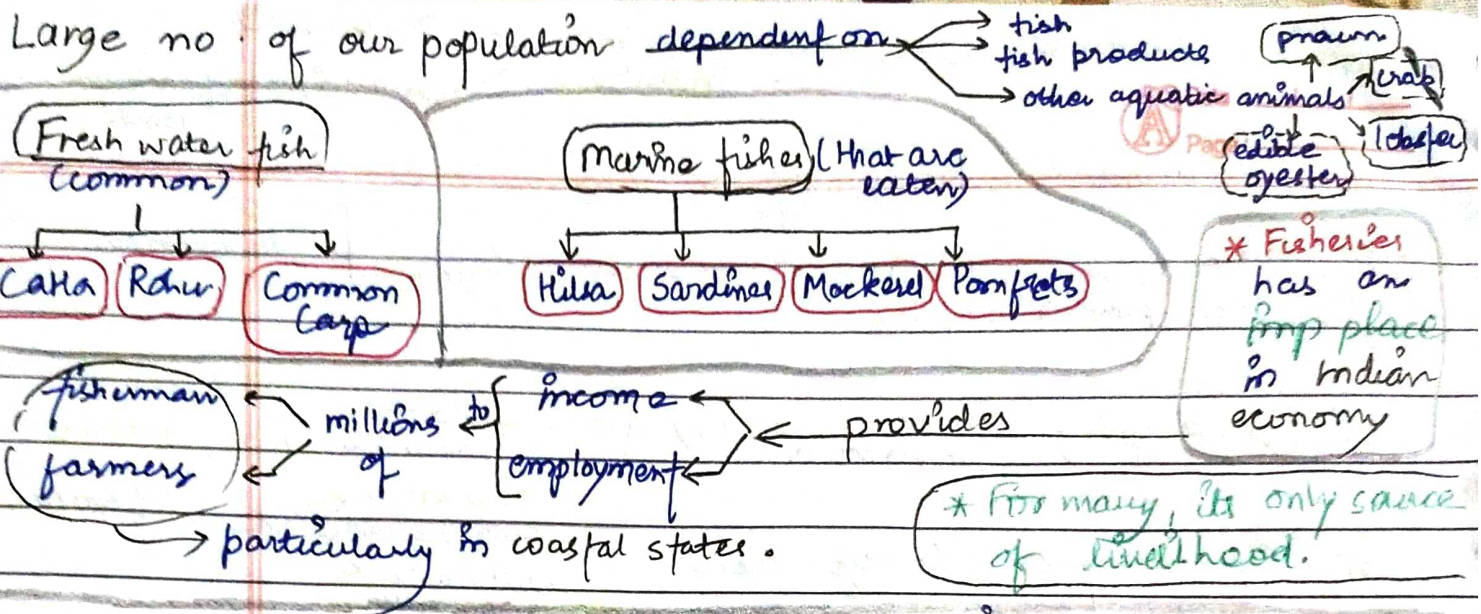
(v) Handling collection of honey & beeswax
 Bees are Pollinators of many crop species
 Sunflower, Brassica, Apple, Pear

★ Keeping beehives in crop fields during flowering period
 → ↑ pollination efficiency
 → improves the yield
 both beneficial from crop yield & from point of view of honey yield.

FISHERIES

industry devoted to

catching → Processing → Selling
 fish, Shellfish, other aquatic animals



"BLUE REVOLUTION" along same lines as → Green revolution

Aquaculture → Rearing, Selling, catching of fishes & aquatic animals & aquatic plants, algae in salt water & fresh water

Pisciculture → Only fishes & crustaceans & aquatic animals involved (~~plants~~)